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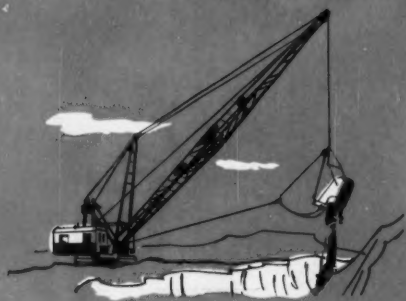
October, 1957

Volume 34, No. 10



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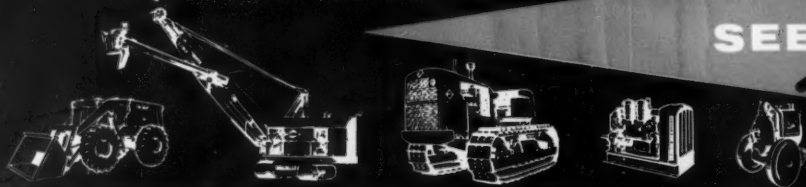
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Also in the same general area, Mr. Calvin D. Sarver resides at 921 E. Main Street in Clarion, Pennsylvania. He may be reached by phoning Clarion 5-R or 5-M.

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COAL MINING

Vol. XXXIV

OCTOBER, 1957

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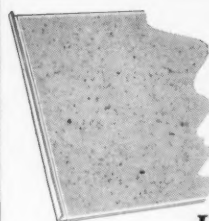
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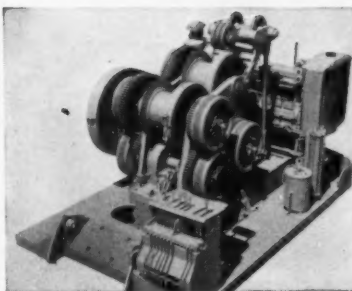
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Standard on every Link-Belt Speeder, Speed-o-Matic power hydraulic controls minimize operator fatigue. Response is fast, positive, precise

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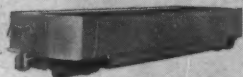
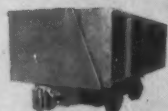
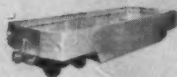
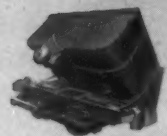
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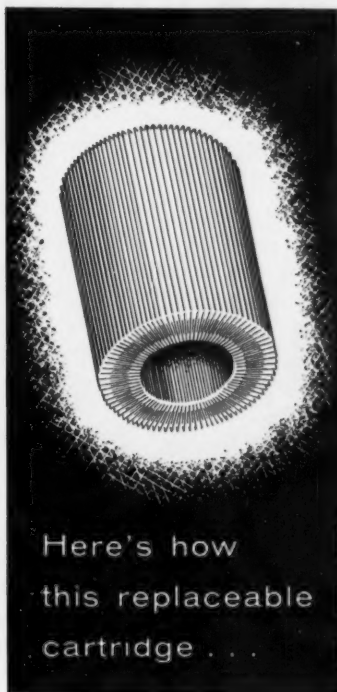
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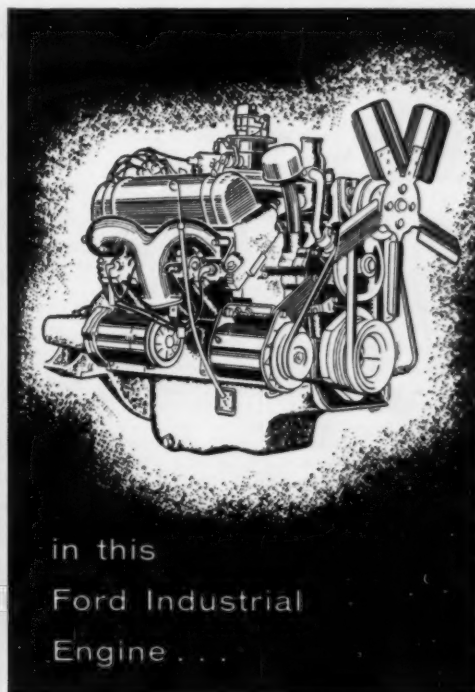
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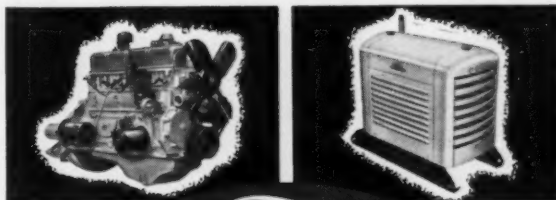
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Do You Know?

Promise of a device to "purify" automotive exhaust gases by passing them through a purifier located near a car's engine was forecast.

Such a device now looks possible through the discovery of a plentiful and inexpensive oxidation catalyst found by Ford Motor Company engineers during their anti-smog research. The catalyst, vanadium pentoxide, a yellow powder, successfully removed more than 80% of the offensive hydrocarbons in exhaust fumes during the equivalent of 4,000 miles or driving.

"Since it is a uranium by-product, vanadium pentoxide is in excess supply at a cost which makes an exhaust device look more economically attractive than ever before," Eugene F. Hill, manager of the chemistry department at the Ford Scientific Laboratory, said.

Mr. Hill also revealed that Ford engineers in their search for anti-smog weapons had developed a "hydrocarbon integrator," a long-sought instrumentation system that automatically, instantaneously and accurately measures hydrocarbon emission from the exhaust of an automobile under any driving conditions.

John W. Spurdle, a partner in the New York investment firm of Dominick & Dominick, told the second general session of the 40th Anniversary Convention of the National Coal Association that there has been a rebirth of bituminous coal and with the industry "in a new phase of growth" forward-thinking companies "will do well to explore the possibilities of arranging outside financing."

The investment banker acknowledged that "some features of this procedure (public disclosure of certain company information which is required by securities laws) correspond to undressing in public and these are not compatible with the historic practices in the coal industry" but that in spite of this public financing is something "which the coal industry should embrace enthusiastically."

For successful public financing, Spurdle said, a company must have adequate reserves of coal, its finances, capital structure and financial record must stand scrutiny and, "most important," its management must be forward thinking.

Spurdle said in comment on the importance of forward thinking as a factor in a company's growth that "a phase has been coined in the field which has real meaning—'Career Companies'."

"Unless a company has basic aims to take full advantage of the growth opportunities now existing in bituminous coal, and has well worked out plans to that end, involving the use of the money it seeks, financing is not readily available to it."

Emphasizing that "proven and progressive management" is the most important factor in a company's borrowing ability, Spurdle said "the next most important consideration is size."

Spurdle concluded that a company should have a minimum annual output of 2,000,000 tons a year to engage successfully in public financing, but it must also satisfy all the other requirements he had outlined.

HERE AND THERE IN THE COAL INDUSTRY

• The Kentucky Reclamation Association, Incorporated, at its annual stockholders meeting at Earlington, Kentucky on August 13, 1957 re-elected Jesse O. Williams of Hart and Hart, Providence, Kentucky as president; O. E. May, P. & M. Coal Mining Company, vice president; and Robert F. Donaldson of United Electric Coal Company, secretary-treasurer.

The following directors were re-elected: G. R. Chandler, Cullen Jenkins, James Deane, James A. Miner and H. R. Duncan. Two new directors were also elected: Myron H. Sitton of G. & R. Coal Company and W. G. Blewett of Peabody Coal Company, St. Louis, Mo. The Association staff officers are John M. Crowl, executive director; F. W. Collins, Field Director; B. H. Orton, Planting Supervisor and F. E. Rich, assistant secretary-treasurer.

George E. Owens, president of Imperial Coal Corp. of Johnstown and New York City, was elected president of the Central Pennsylvania Coal Producers' Association and Eastern Bituminous Coal Association at the joint annual meeting of the Associations on Sept. 5 at State College, Pa.

One of NCA's two scholarships in fuel technology at the College of Mineral Industries of Penn State University has been awarded to Edward H. Klebacha, of Reynoldsville, Pa. The son of a miner, young Klebacha was third in a high school graduating class of 76, receiving top grades in mathematics, chemistry, and physics. He placed 29th out of 1,044 participants from 146 schools in the American Chemical Society Secondary School Contest and received honorable mention and placed among the top ten out of 5,595 students who took the 1957 state scholarship examinations. The NCA scholarship is good for four years. The other NCA scholarship was awarded earlier to Leslie V. Shaffer, II, of Harrisburg, Pennsylvania.

AGE SYSTEM ACQUIRES ANOTHER OHIO RIVER PLANT SITE

Announcement was made by the American Gas & Electric System of the purchase of 1,450 acres of land in Mason County, W. Va., 27 miles upriver from Huntington, as the site of a future coal-fired electric generating station. The latest site was acquired, the Company said, because of "its proximity to abundant and economical coal reserves."

All officers and directors of the Kanawha Coal Operators Association were reelected at the annual meeting held in Charleston, W. Va. Officers who will serve during the coming year are: L. Newton Thomas, president; Harry M. Tibbs, vice president; Harry Kennedy, executive vice president; and C. C. Dickinson, Jr., treasurer.

Funeral services for Harry L. Gandy, former executive secretary of the National Coal Association, and one of the best known men in the coal industry, were held this week in Los Gatos, Calif., and Rapid City, S. D. Mr. Gandy, 76, died in Los Gatos the night of Aug 15 after a long illness. Interment took place at Rapid City, South Dakota. Mr. Gandy, father of Harry Gandy, Jr., NCA safety director.

Frank F. Kolbe, president of The United Electric Coal Companies, Chicago, has been named chairman of the Chicago Host Committee and also a member of the General Convention Committee for the 1958 NCA Convention.

Mr. Kolbe will work with Frank A. Burke, chairman of the 1958 NCA Convention Committee, and the other members of the general committee, in completing arrangements for the Convention. The 1958 NCA Convention will be held in Chicago, June 4 and 5, at the Conrad Hilton Hotel.



Standing is William H. Ritter, Pres. Reitz Coal Co. and outgoing Pres. of the Assoc. Sitting on left is Edward G. Fox of the Bituminous Coal Operators Assn. who was the Principle speaker.

ANNUAL BANQUET

of the

CENTRAL PENNA. COAL OPERATORS ASSN.

An old Chinese philosopher once said: A single conversation with a wise man is better than 10 years of study of books.

The days of our present deep coal mining methods are rapidly running out. The future in coal mining is not for men without vision or men with punitive minds; it is for men of wisdom with persistence and courage and patience to transform great desires into realities.

Gatherings like this of men in industry are held for the interchange of ideas to advance knowledge, knowledge that creates new desires. It is impossible to hold provincial views while pursuing knowledge.

Greater knowledge, shared with others of the same group, will help us solve the varied perplexing problems of our industry. The full impact of applied knowledge, very often gained at meetings like this, may not come for months or even years and seldom can be completely evaluated.

At group meetings a pattern of perceived improvements can be outlined, which, later, can be more closely observed and differences can

be introduced with significant betterment to the whole. No matter if we go wrong in some one venture in the beginning, somebody must make a start in new mining methods sometime, somewhere.

It is not a question of whether or

not coal can be mined easier and more economically: it is a question of whether or not our present directing personnel possesses the wisdom with persistence and courage and patience to transform such a great desire to reality.



Left: Dr. Edward Steidel, Federal Coal Mining Safety Board of Review; T. A. Fontyn, Pres. Ebensburg Coal Co.; T. Ree Scallon, Chief, Div. of Bituminous Coal, U. S. Bureau of Mines, Washington, D. C.; Ralph Lambert, Penna. Dept. of Mines and Industry.



Left: R. T. Laing, Executive, Dir. of the Asso.; W. Stewart Helm, Speaker of the Penna. House of Legislature; Heath S. Clark, Chairman, Finance Committee, Rochester & Pittsburgh Coal Co.; Tom Pickett, Executive V-Pres. National Coal Association.

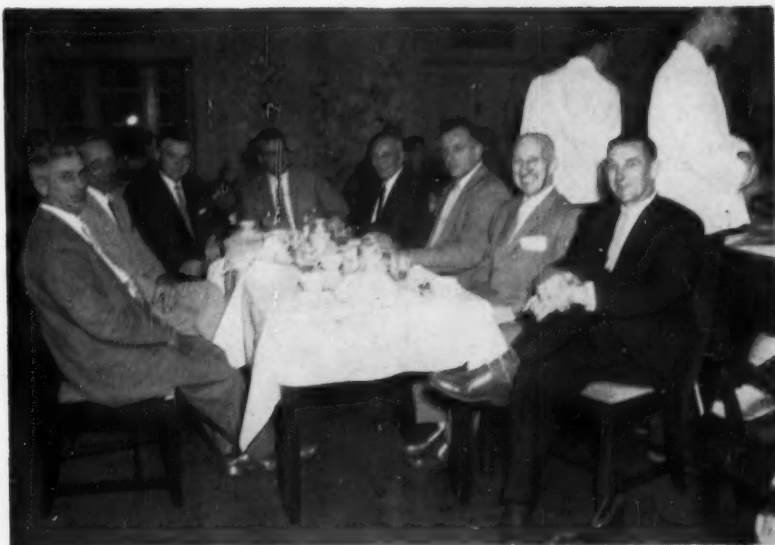
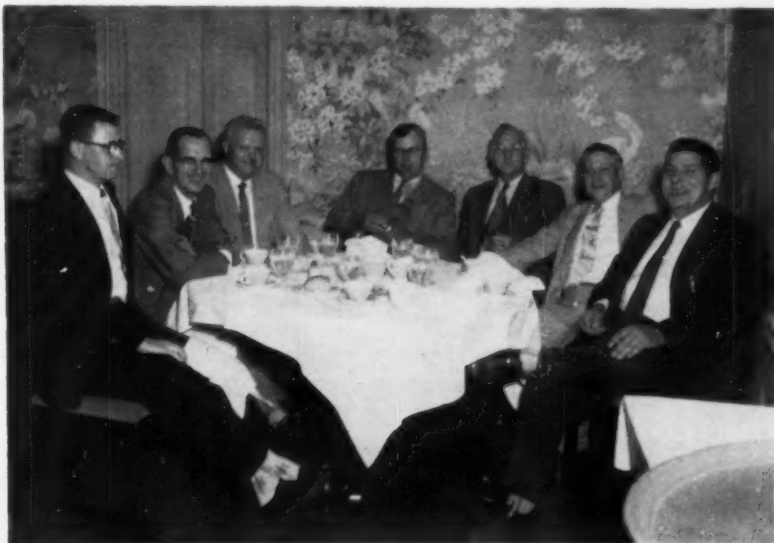


Left: Dr. Elburt T. Osbourn, Dean Mineral Industries, Pennsylvania State University; R. B. Mahany, Pennsylvania State Senate; Frank G. Smith, Attorney for the Assoc.; M. J. Anleney, Director, Bureau of Mines, Washington, D. C.



Left: Franklin Miller, Mining Eng.; George Hobba, Inspector of Mines; U. G. Palmer, Supt. Construction; R. R. Pfahler, Consulting Engineer; P. O. Douglass, Dist. Auditor; W. R. Wood, Electrical Supt, all with the Berwind-White Coal Mining Co.

Left: John G. Emerick, Mining Engineer; Isadore Wesner, Chief Engineer and George T. Atkins, Electrical Engineer, Barnes & Tucker Coal Co.; John Emerick, Jr., Chief Clerk; Frank Waggett, Supt., Cambria Clearfield Mining Co.; Perry B. Gaddis, Mine Inspector; Gerald Kephart, Chief Mining Engineer, Bituminous Casualty Co.



Left: Geo. Dunchak, Mine Fore., Ronald Luts, Shop Fore., R. T. Todhunter, Jr., Vice-Pres., John S. Todhunter, Gen. Supt., Barnes & Tucker Coal Co., C. J. Dalzel, U. S. Bureau of Mines, John Drahnak, Asst. Fore., Lew Ribbins, Electrician, Howard Shaw, Master Mechanic, Barnes & Tucker Coal Co.

In this group are: R. E. Moore, V-Pres. Rock Hill Coal Co.; Joseph Golgosky, Foreman; Francis T. Brown, Pres.; C. F. Clement, V-Pres. and D. J. Keenan, V-Pres. all with the Sterling Coal Co., C. L. Knight. Winslow-Knickerbocker Coal Sales Co.



Progress in
**HYDRAULIC TRANSPORT
OF COAL**
in Great Britain

by LEO WALTER
Consulting Engineer

Pipeline Caterpillar Tractor at Work





Developments of piping of coal using water as the transporting medium have been vigorous in several countries. Full size pipeline plants are under construction in U. S. A., Canada, France and in Russia. In Great Britain, where all coal mining is performed by the National Coal Board after nationalization of privately owned coal mines, a number of experiments have been carried out as follows. The Board's inquiries are concerned with the transport of large lump coal, initially up to two and three inches in size, and two experimental installations are running, one at Woodend Colliery in the West Lothians of Scotland, to pump coal up a 250 ft. shaft, and another at Markham Colliery in Derbyshire, to test out the haulage of lump coal through a 1000 foot long pipe line running overground from a nearby pithead to the colliery's central washery.

A good deal of work on the scientific knowhow of the method has been undertaken in the laboratories of the British Hydro-mechanics Research Association at Harlow in Essex and much of the scientific data on pipe diameters, specific gravities, velocities, and friction loss has been collected there. The next stage of development, the account on instrumentation and control, has been proceeding under the Board's engineers at the two experimental points.

The main problems have been to obtain the right type of pumping,

apparatus, and to devise a satisfactory method of feeding the coal into a pipeline, and a number of different pumps and feeders have been tried.

Main Problems

As is well known, solids can be fed into a pipeline either directly, by the type of pump used for handling a mixture of solids, such as gravel and water, or by a device which feeds coal into the outgoing side of a clean water high pressure

tails using considerable power. An alternative approach, which is being undertaken by the British National Coal Board's Engineering Branch, is the design of a mechanical displacement feeder which forces coal into the hydraulic system in one operation; this would have the advantage of eliminating the need to pump back displaced water and also reduce the number of other items of equipment, with a marked saving of space underground.



Buckeye Trench Digger Opening Trench for Pipeline

pump which generates the pressure necessary to send both coal and water along the pipeline. Solids handling pumps tend to be low in pressure and high in cost and there is an economic limit to their employment. All the coal feeding devices can deal with higher pressures and generally operate on a water displacement principle in which solids inserted into the pipeline displace a similar volume of water, the feeder merely exchanging quantities of coal for similar quantities of water. There is the problem of pumping the displaced dirty water back into the system and as this has to be done about against the pressure it en-

Test Results

The Markham experiment has shown that coal can be conveyed by piping between points on the surface and the cost of operating compared with haulage by road, rail or canal. The Woodend installation, which has been operating on an open circuit, has proved that a vertical pipe lift up a shaft is practicable with the equipment being developed. It has been decided to change the Woodend installation over from the open circuit, in which the pit water used for pumping is allowed to drain off at the surface, to a closed circuit where the same water is recirculated around the system. This

should effect some savings in cost and dispose of the possibility of polluting nearby streams with dirty effluent.

The Markham and Woodend experiments in Great Britain have provided useful information but shortness of staff has so far prevented any intensification of these activities; further schemes are necessary before the practical data for comparing hydraulic transport with the economics of other forms of pit transport can be provided and it is for this reason that the Coal Board has decided to appoint a small team to co-ordinate this work in order that it can be pushed forward and extended.

As far as conditions in British coal mining are at the present it can be assumed that hydraulic transport may not be suitable in a mine with good roadway conditions and easy access to the coal preparation plant. It might find a profitable employment in an older type of British coal pit which has undulating roadways with rope haulage and a number of transfer points which are great absorbers of manpower. A further possible application is surface distribution of coal to large consumers. There is another factor which will undoubtedly affect the progress of hydraulic transport in Great Britain: the Board is also interested in

the possibilities of hydraulic mining which is being developed in soft seams in the Russian, Polish and New Zealand coal fields, the coal being extracted by directing a high velocity jet of water by means of a monitor connected to a high pressure water pipeline and the mixture of water and broken coal troughed away to a sump from which it can be pumped to the surface by a hydraulic system. When enough is known about this it will probably be decided to extend hydraulic transport direct to the coal face, and so extract and transport the coal hydraulically from the coal face to the surface in one single more or less automatic operation.

Off-set Caterpillar D8 Pipelayer, one of more than 50 pieces of heavy equip-

ment on this particular job, lowers in 24-inch pipe.





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PLUS**

with CAT Rubber-Tired Earthmovers

Speed—sure! You can count the cycles and watch Cat Rubber-Tired Earthmovers make more trips and move more dirt than other rigs. But it takes a lot more than speed to put money in your pocket. You need *power* and *lugging* ability to take a heavy load out of a steep cut and climb adverse grades without excessive shifting and loss of speed. You need *dependability* to stay on the job day after day. You need *matched design*—entire earthmover from engine to scraper built by one manufacturer—for balanced performance and long equipment life.

You get them *all*—plus many other in-built values—in Caterpillar equipment, sold and serviced by your Caterpillar Dealer.

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WHETHER IT'S A JOB FOR
TIRES OR TRACKS... SEE YOUR

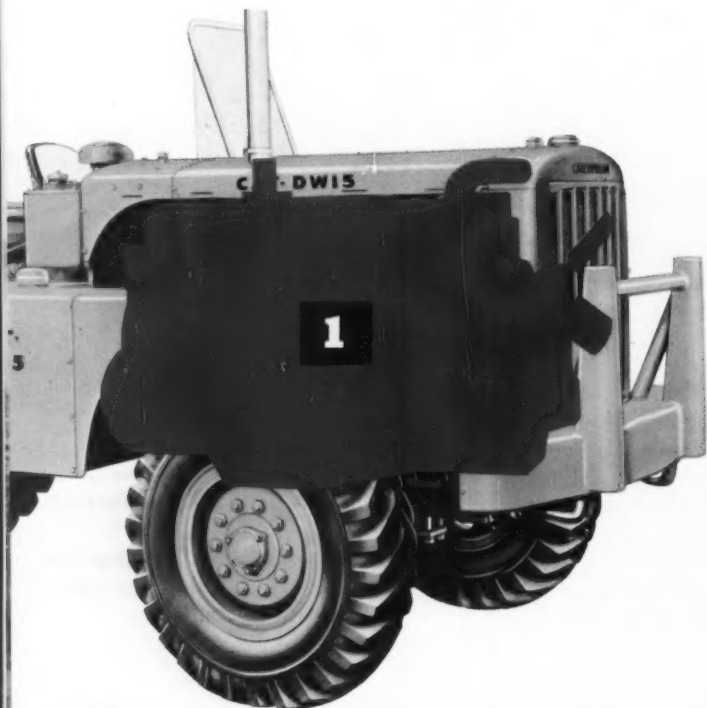
CATERPILLAR Dealer



1 PLUS VALUE . . . Cat-built Diesel Engines . . . Cat Wheel Tractors are powered by 6-cylinder, 5 $\frac{1}{8}$ " bore x 6 $\frac{1}{2}$ " stroke, Cat-built Engines that are famous for lugging ability, long life and freedom from down time. Cat DW21 and DW20 Tractor engines are turbocharged for more power and maximum fuel efficiency.



2 PLUS VALUE . . . Cat-built Transmissions . . . Cat units have a speed to match every loading or hauling condition on every job. The DW20 and DW15 have 10 forward speeds, the DW21 has 5. Speeds range up to 37.2 MPH for the DW15, 32.1 for the DW20 and 20.5 for the DW21. Transmissions are Cat-built, constant mesh.



PLUS VALUES

**in design
found only in
CATERPILLAR
Wheel Tractors**

5 PLUS VALUE . . . LOWBOWL Scraper . . . Matched, easy to load LOWBOWL Scrapers are available for Cat Wheel Tractors. LOWBOWL Scrapers get their loads faster, which means less time in the cut, bigger payloads, and an extra margin of profit to you. Bowl is longer and wider; fills rapidly without excessive piling up.

6 PLUS VALUE . . . Interchangeability . . . A wide selection of matched, companion equipment is available for use with Cat wheel-type Tractors. This includes scrapers, rear dump, bottom dump and side dump trailers, special bauxite trailers, heated body trailers, and others. Get the facts on them at our headquarters.



Get all the latest facts about PLUS VALUES

CATERPILLAR



3 PLUS VALUE . . . Final Drive . . . All drive components are held rigidly in line by massive box section frame and strong cast members. Quiet, spiral bevel gear and pinions in final drive are mated when machined. Full-floating axles transmit power only — do not carry machine — assuring extra safety, easier maintenance.



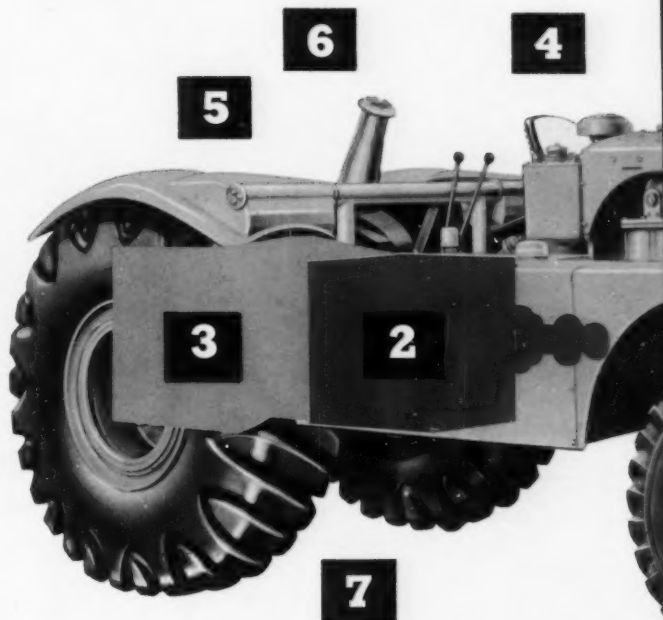
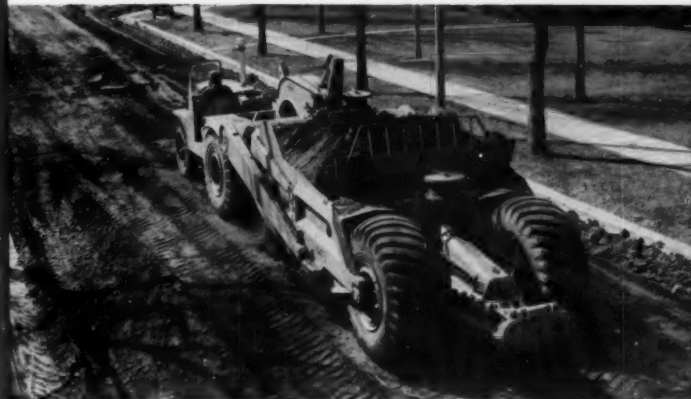
4 PLUS VALUE . . . Easy to Operate . . . Operators prefer Cat wheel-type Tractors. They're comfortable with plenty of room. Good shift patterns, air boosted clutches and constant mesh transmissions make shifting faster and easier. Articulated design of tractor and trailer speeds maneuvering and boosts production.

Here they are—the BIG 3 among rubber-tired earthmovers—Cat DW21, DW20 and DW15 Wheel Tractors with matched equipment. They bring you more *plus values* than any other units in their classes, and these *plus values* mean more production, less upkeep costs, easier operation and more paydirt for you. Want proof? In actual jobs run by contractors, Cat wheel-type Tractors and new Cat LOWBOWL Scrapers, out-produce other units of similar "rated" capacities by 18%, 21%—even more!

As your Caterpillar Dealer, we invite you to get first-hand information on the complete line of Cat-built Tractors and matched equipment at our headquarters. We're at your service to help you make your jobs easier and more profitable. We'll demonstrate the equipment you need. Then you can take the controls and get the feeling of real roadability—check cycles and loads and measure the extra production—talk with owners and get the long life story. You name the date—we'll demonstrate!

7 PLUS VALUE . . . Tubeless Tires . . . Wide-section, tubeless tires are standard on all Cat Wheel Tractors† and Scrapers. Tubeless tires eliminate an estimated 80% of down time caused by tube-type tires, and the wide section gives better flotation and traction. These are a few of many plus values in Caterpillar-built equipment.

†Except front tires of DW20 and DW15.



BRIEF SPECIFICATIONS

	DW21	DW20	DW15
Engine (Cat-built, 4-cycle diesel)	300 HP†	300 HP†	200 HP†
Speeds	5 forward 2.3 - 20.5 MPH	10 forward 2.8 - 32.1 MPH	10 forward 2.7 - 37.2 MPH
Maximum Rimpull	38,420 lb.	31,380 lb.	27,500 lb.
Tires			
Drivers (tubeless)	29.5 - 29	29.5 - 29	26.5 - 25
Front	14.00 - 24	12.00 - 20

from your **CATERPILLAR Dealer**

SPEED PLUS

with

CAT* No. 12 Motor Grader



Exclusively available for the Caterpillar No. 12 Motor Grader — the amazing Preco electronic blade leveler.



Positive mechanical power controls give precision control of every step from rough cut to fine grading.



SPEED—plus the proper balance of big capacity, ruggedness and power—here are the necessary ingredients for making money with a motor grader—and the Cat No. 12 Motor Grader has them all! Compare this fine machine with *any* other and you'll find it costs less to maintain, costs less to operate, produces more, lasts longer.

The first No. 12 was announced back in 1938 and it has been the pace setter ever since. Today's No. 12 has all the built-in features found in earlier machines: ruggedness, easy blade positioning, accuracy, excellent job visibility, operator comfort, and many others. But here are some *plus values* you get: exclu-

Exclusive Caterpillar long radius side shift permits operator to make every practical blade position without leaving seat.



sive oil clutch that runs up to 1500 hours without adjustment; tubeless tires that eliminate tube and flap trouble and reduce tire down time; in-cab starting with optional direct electric or gasoline starting engine; power shift moldboard available for fast blade positioning.

Let us show you how the new Cat No. 12 Motor Grader can bring new profits to your job.

DW1311

Printed in U.S.A.

CATERPILLAR

THE WORLD'S MOST COMPLETE LINE OF EARTHMOVERS
SOLD ONLY THROUGH CATERPILLAR DEALERS

Stripping Freeport Seam Coal Near Uniontown, Pa.



Caterpillar D 8 tractor pushing overburden.



Link Belt Shovel moving overburden.

At Haydowntown which lies about 15 miles South of Uniontown, Pennsylvania, the Freeport seam of coal is present in a mountain range which begins at this point and rises Southward.

Haydowntown lies in a valley which traverses this area and appears to indicate the ending of the Pittsburgh seam coal in the Mountain to the North and the beginning of the Freeport seam coal in the Mountain to the South.

Jim Louchner of Hopwood, Pennsylvania is stripping the Freeport coal at Haydowntown. The seam lies in the lower part of the mountain and rises with the terrain southward. The structure of the coal resembles that of the Thick or Double Freeport seam in the vicinity of Springdale, Pennsylvania which consists of a lower layer of coal overlain by a band of Mother coal on which is another layer of coal. At Haydowntown the Mother coal is present over the lower layer but the top layer of coal varies in thickness and at times is not present at all.

Stripping is done with a Link-Belt Model K 375 shovel with high front, assisted by a Caterpillar D-8 tractor and a Allis-Chalmers H-D - 16 tractor. The coal is loaded by the Link Belt shovel.

SAFETY TRAINING FORMULA

by

JACK E. BEDFORD

*Professor of Management
Armstrong College*

Here is a time-tested formula for safety training used by coal mining executives that is easy to apply and easy to remember.

Management-minded coal mining executives are putting more and more emphasis on safety training. They know that a safety-trained employee is a safety-conscious employee and consequently is less accident prone. A safety training program keeps accidents of all types at a low level with resulting savings in production time, benefit expense, and employee morale is improved.

Regardless of whether a safety-trainer is employed or whether safety training is handled on the

job by the supervisors, this safety training formula will work. It is easy to remember—easy to apply. And, it follows a logical learning process of the SAFE way to perform any tasks around the coal mine.

This safety training formula, reduced to the simple, easy to apply, easy to remember form, is:

1. Tell
2. Show
3. Ask

TELL

The first step of this safety training formula is most important. It sets the stage for the way the balance of the training will be accepted and remembered. The way you tell the employee how to follow the safe procedure is vital to the success of this formula:

1. *Point Out Gain.* Before you go into detail on how the task should be performed in the safest way, you will find it best to get the employee interested in the instructions. One sure fire way to



do this is to highlight what he will gain by following your safety instructions.

For instance, in your safety instructions, you might say:

"This is the safe, easy way to do this. You may think it is more complicated, but when you realize how much easier it is for you to do it this way, I am sure you will realize that this is the best way to do this."

This brief bit of instruction following the TELL part of the safety training formula, applies the "benefit" part of learning. There is something in it for the employee—he has an easier way to do the work. And, as a plus benefit he gets a safer way to do it. Both of these appeals will encourage him to follow your instructions.

2. *Use Step-by-Step Logic.* After you have sold the employee on the importance of safety training by pointing out what he will gain, you are ready to go into more detail. Safety trainers have found this is most effective when the task is broken down into separate parts . . . a step-by-step way of performing the job.

Your job analysis will uncover some danger spots in the operation. A little thought by a safety-minded executive will lead to an easier and a safer way to do the job. And, because it has been broken down into its logical way, the learning will be easier and more memorable.

3. *Prove Your Point With Reason Why.* Following the TELL part of this safety training formula, you start out with something the employee will gain (easier work, for instance) and you follow this up with a reason why (what about the safe way of performing the task makes it easier). Then, in the next step, SHOW, it is proved to the employee that this statement is right.

SHOW

Here is where showmanship comes into the safety training formula. It demonstrates vividly

how the employee will gain what is promised. It is the proof-of-the-pudding. It should be vivid so the employee can easily visualize that what the safety trainer has said is right.

1. *You Show Him.* To demonstrate the safe way of performing any task around the coal mine, safety trainers find it best if they do it first. This insures that the employee will not get mixed up on what is to be done and miss the point completely. Also, it gives the safety trainer a chance to demonstrate most effectively.

2. *Have Him Show You.* After you have completed the demonstration of the safe way to perform the job, you will want to be sure the employee understands completely. You have him show you how to do it. This plan has the advantage of showing the employee what to do and then making the employee part of the safety act when he does it the safe way.

3. *Right . . . Wrong . . . Right.* Some people learn faster when they see something performed in the wrong way. They can see that it isn't right or is dangerous easier than they can see it is safe to do it the recommended way. This is where some safety trainers follow the right way, the wrong way, and then the right way part of this safety training formula.

It is best to show the employee the correct way of performing the task first. Then, show the wrong way to do it. This can be exaggerated to some extent so the employee will quickly realize he should not do it this way. This is followed by the right way of performing the task to leave the final impression of the right (safest way) in the employee's mind.

ASK

Here is where you nail down the safe way of performing the task. It is important to keep in mind what employee benefit you are proving. As a case in point, consider this example:

TELL: "You will find this easier."

SHOW: Safety trainer shows the employee the easy and safe way to perform the task.

ASK: "Don't you agree that this is quicker?"

This illustration follows through with the TELL, SHOW, and ASK steps of the safety training formula. It fails, however, to nail down the main point to be considered—easy and safe way to perform the job. The trainer and the employee, through their actions, have proven that this is the easy way. Then the trainer asks an irrelevant question about speed of performance—quicker.

The following illustration is much better because it asks a question that nails down the point of the training:

TELL: "You will find this easier."

SHOW: Safety trainer shows the employee the easy and safe way to perform the task.

ASK: "Don't you agree that this is easier?"

It is important to cover all bases in appealing to the employees. But, it is also important to nail down each employee benefit as the demonstration goes along. It is sound safety training that will help keep accidents down in your coal mine.

Here is one more illustration of this safety training formula to serve as a guide for better safety training:

TELL: "As a safety-minded executive, I'm sure you will find this safety training formula easy to use and most effective."

SHOW: (Pointing to the blackboard with the three parts of the formula, I say:) "All you need to do is keep in mind these three steps—(1) Tell, (2) Show, and (3) Ask."

(Time lapse while you try it in your next safety training session.)

ASK: "Now don't you agree that this is an easy and effective way to conduct safety training?"

Reducing Office Supply Costs

By Ernest W. Fair

"Whenever a firm calls me in for a survey to cut down their costs of doing business one of the very first places I always look is for wastes in office supplies. Invariably a saving can be found there for few and far between are the business concerns wherein there are not marked office supply wastes."

The efficiency expert who told us these facts was basing them on long experience. In some firms he found such wastes slight—in others they mounted to sizeable figures. The average found a point in between but in every case the dollars and cents involved were sufficient to have done much more service elsewhere.

Today's multitudinous problems in running a coal company office tend to create such situations therein mostly through oversight on the part of the executive. We ordinarily view supply wastes as being so small, since these materials are in very inexpensive brackets, as to not be of enough importance to justify our attention.

An attitude of this type completely overlooks the very basic fact that small costs, multiplied many, many times as they are in office supply use, can mount into very sizeable figures. Reducing the costs of supplies in any coal firm office is always worth while. Here are pointers, developed through experience in many offices, which can bring about such savings.

Careless store keeping of office supplies is one of the biggest offenders. Four steps can be taken to avoid waste in this area.

(1) Protection against deterioration. Inadequate protection from light, heat, moisture, etc., always results in office supply loss and particularly so with paper and forms. Providing protective storage units

more than repays the cost of the equipment in short order.

(2) Disorderly arrangement of supplies is always expensive. It encourages damage, soiled items and disrespect on the part of office workers for anything so stored.

(3) Defective stock keeping is a source of loss in many offices. When we run out of anything we must make expensive small unit purchases to bridge the gap.

(4) Careless use. A few simple instructions to office workers on the proper method of using supplies can avoid this. Generally it results because the individual has never been given a true picture of how such carelessness adds to costs.

Another common cause of waste in use of supplies in coal company offices is through the lack of proper control over such supplies. Here are a few steps which can be taken to tighten such control: (a) Place definite responsibilities for use of stocks and designate one employee to control them. (b) Dispense small items in small packages—giving a clerk 1,000 paper clips instead of 100 at a time encourages her to waste them. (c) Standardize as much as possible to permit larger purchases at one time and reduce per unit costs.

Here are specific suggestions for use of individual office supply items designed to keep such costs down:

Paper—Use lighter weight paper for stationery. Provide half size stationery for short letters and memos. Use back of letters for carbon of reply. Use the telephone, inter-com or direct verbal means to cut down inter-office memos. Use both sides of paper for bulletins, notices, etc., which have no permanent value. Run regular checks on duplicated material to cut down unnecessary copies being

made. Use obsolete or soiled forms for scratch pads.

Envelopes—Use lighter weight and smaller envelopes. Standardize on as few sizes as possible. Eliminate use in the office for filing. In inter-office use, leave unsealed so it can be used again. Consolidate all mail going to one person into a single envelope.

Forms—Every three months check each form used to justify its further existence. Standardize and simplify to reduce paper waste. Make revisions of forms in heavy use only when absolutely necessary. Save print orders on forms so that a number can be run at one time and cut costs. Use one-color printing on all forms; if color separation is worthwhile do it with color in the paper. Cut down the use of printed-numbered forms as much as possible as this is one of the most expensive extra printing features.

Filing supplies—Re-use file folders as much as possible; reverse or re-label when possible. Keep dead material from the files and re-use folders, guides, etc., as much as possible. Use the backs of obsolete file cards. Limit binding prongs on file folders to use only where necessary to keep material in order.

Typewriter ribbons—Select typewriter ribbons more carefully to find the best for the money; too many are purchased for other reasons. Check possibility for eliminating red-black ribbons; does red use justify the virtual waste of almost all red on such ribbons? Turn one-color ribbons periodically; it's an excellent way of getting more "mileage" from them. Alternate with two ribbons to secure more life. Wind ribbons to one side each night; reduces air effect on inks therein.

Pencils and pens—Use mechanical pens and pencils as much as possible.

Reduce the number of varieties and colors in use. Use harder grades to increase life.

Carbon paper — Choose carbon papers designed for particular jobs. Prevent wrinkling and tearing at desks by use of folders or old boxes. Turn carbon paper more frequently.

Small items — Require clerical workers to save and re-use clips, rubber bands, etc., from incoming mail. Use stapels instead of clips or pins wherever possible to do so. Use only one where it will get the job done satisfactorily. Impress on employees the value of such items over the years period of time and get rid of thinking on how little each costs individually to secure more attention to conservation.

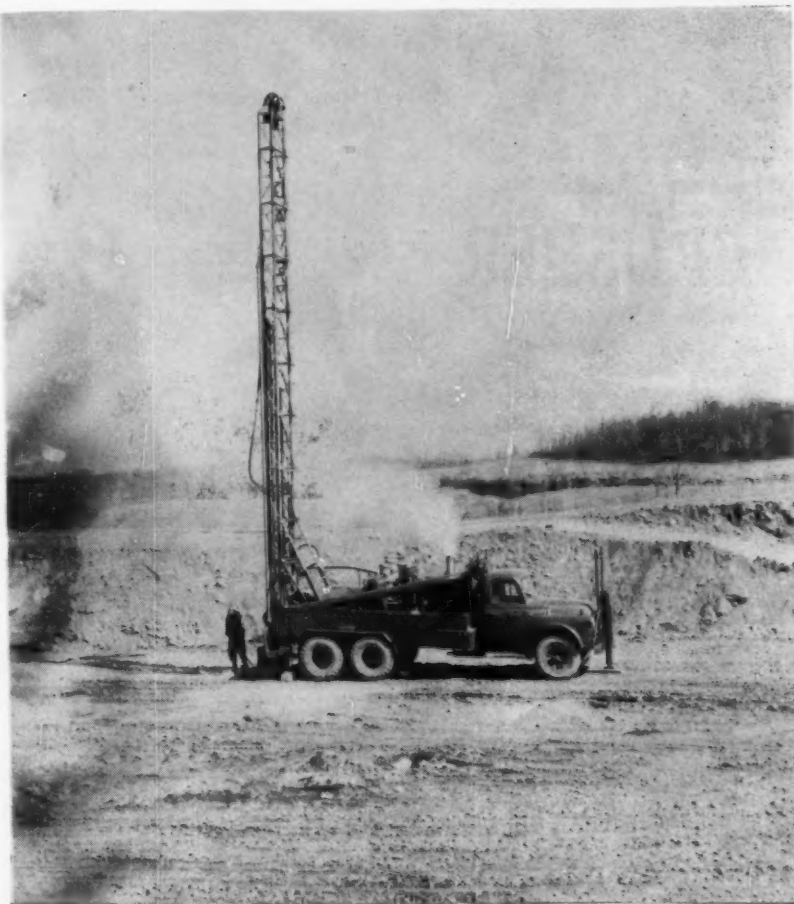
Typewriters and office machines — Impress need for daily cleaning of keys, carriages and rollers. Provide covers for all machines and insist on covering when machine is not being used. Use heavy backing sheets to conserve platen rollers. Permit use of any machine only by individual who knows how to use and take care of it. Pay attention to little malfunctions even though work can be done; small repairs are always less costly than big ones.

Utility use—Waste can exist here just as in use of supplies and materials. Use lights only when needed and be strict about their being turned off when not in use. Paint ceilings and walls a light color. Keep windows and light fixtures clean.

Reducing the cost of supplies in the coal company office is always a matter of attention to detail and the development of the conservation habit by everyone from the executive to the newest employee therein. Habit is often the key. If an employee develops careless habits, waste will always be present in ever mounting volume; if the conservative and careful habit is developed costs are always reduced. It is seldom accomplished through use of an economy wave—usually waste is greater after the evangelical period than before. The way to do it, efficiency experts all declare, is through habit and state of mind of every person working in the office.



Caterpillar D8 Tractor equipped with overburden on coal stripping operations, No. 8U Bulldozer is used for stripping west of Clearfield, Pennsylvania.



Davey M-SAL rotary drill at Mays Coal Co., Limestone, Pa.

• Manitowoc Engineering Corp. has recently announced the publication of a 16-page booklet describing their Model 3000 series of 2-yard shovels, draglines and 40-50 ton cranes.

In addition to giving full specifications of these units, the bulletin outlines in detail the many exclusive engineering features that give the Manitowoc Model 3000 more power and versatility with less maintenance downtime than any other shovel, dragline or crane in its class.

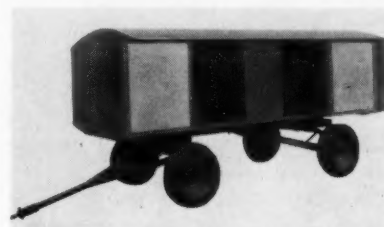
This attractive and informative booklet may be obtained from Manitowoc distributors, or by writing direct to Manitowoc Engineering Corp., Dept. MRS, Manitowoc, Wisconsin.

• A portable explosive magazine that can be hauled by light truck or tractor to the job site to facilitate blast hole loading is announced by Austin Powder Company, Cleveland 13, Ohio.

Known as Model 800, it has capacity for more than the average daily requirements of explosives, detonating fuse and caps (8,000 to 10,000 lbs.). Loading and unloading are said to be simplified by 5 large doors, 2 of which are located on either side with one at rear.

An important feature of the 800 is the fifth wheel type design of the front axle which is reputed to assure

complete maneuverability even in close quarters. Arched tubular construction of front and rear axle provides ground clearance and strength necessary for travel over rough terrain.



Austin Powder Company's new Model 800 portable magazine.

According to Austin, magazine is constructed of welded steel throughout and separated into 2 compartments. Sides and top are wood lined while the floor is covered with masonite. Overall body length is 14 ft., width is 6 ft., 4 in. and height is 46½ in.

For further details, request bulletin LL-5588, Austin Powder Company, Cleveland 13, Ohio.

SCOTTDAL

DEPT. CM

BOX 51

MACHINE, FOUNDRY & CONSTRUCTION CO.

SCOTTDAL, PA.

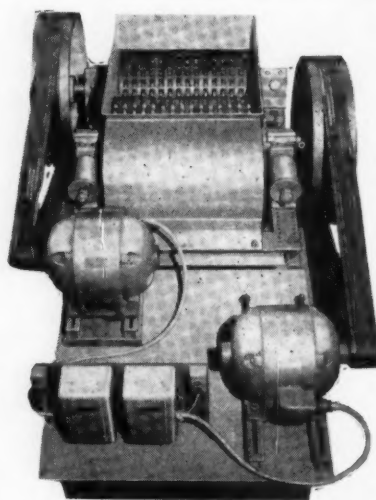
DOUBLE ROLL

COAL CRUSHER

EFFICIENT . . . produces a more uniform product!

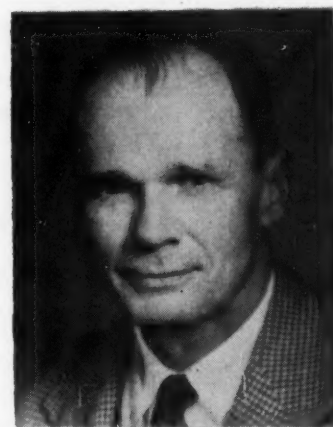
ECONOMICAL . . . uses less power!

BOOSTS . . . sales—profits!



NO. 63 SPECIAL — 2 Motor Drive — Produces a Product ¾" to 8". Equipped with Two Grooved Flywheels. (No Gears)

Efficient and practical the shredding action of the crushers' tooth studded double rolls turns out a more consistent product. Quality produced forged steel tooth gears, welded steel base, bronze bushed journal bearings, welded steel hopper and grooved flywheels.



• Sam English has been promoted to Sales Engineer in charge of the Caterpillar Engine Division of Cleveland Brothers Equipment Company with headquarters in Harrisburg. Sam's many years of experience in the construction equipment field, (10 of these with Cleveland Brothers) well qualifies him for this important position. All engine sales in the Cleveland Brothers 32 county territory will be supervised by Mr. English.

VERSATILE BUCYRUS-ERIE STRIPPER WITH THE RIGHT CAPACITY AND REACH



Whether your stripping operation requires a dragline, stripping shovel or a standard shovel, the Bucyrus-Erie 88-B offers the flexibility to do the job to your satisfaction.

With either of these three front ends, the 88-B puts more than 75 years of Bucyrus-Erie know-how on your job. It is a dependable, basic excavator—designed to function efficiently with whichever front end best fits your needs.

The 88-B's big diesel power plant, with your choice of torque converter or direct drive, provides plenty of power for the toughest digging and transmits it with high efficiency through the anti-friction bearings to the point of use. Its smooth, soft air controls permit easy, fast operation while retaining the "feel" of control for the operator.

This outstanding stripping specialist is rated at 2 to 5 cubic yards as a dragline, 3 cubic yards as a stripping shovel and 4 cubic yards as a standard shovel. Take your choice and be secure with the knowledge that your stripper comes equipped with Bucyrus-Erie mining know-how.

361E57

A Bucyrus-Erie 88-B dragline strips rock and shale overburden at Beaver Valley, Pa. The machine is owned by the Dean Coal Company, Ramey, Pa.

Bonus Quality Specifications for molding and core sands are rigidly adhered to in the production of castings. Sand compositions must meet close specifications for permeability, moisture content, compression strength, and high-temperature properties. Here, a laboratory technician uses an electronic meter to determine the PH (acid-alkaline ratio) of the sand mixture.

**BUCYRUS
ERIE**SOUTH MILWAUKEE
WISCONSIN



• William (Bill) Davis has been appointed as Sales Representative for Cleveland Brothers Equipment Company. Bill served in the Marine Corps as a Naval aviator during World War II and in Korea. In recent years he was a District Representative for Martin Machine Co. The territory of Adams, Franklin, Fulton and a portion of Cumberland County formerly served by Sam English will now be Bill's territory. He will also cover the southern portion of Huntingdon County, formerly handled by Chuck Hoover. Mr. Davis is married, has three children and plans to move to Chambersburg in the near future.

• "Modern Mining", a catalog of modern, heavy-duty machinery in today's mine, has recently been released by Caterpillar Tractor Co.

Showing how the crawlers, wheel tractors, tractor-shovels and motor graders manufactured by Caterpillar help increase production in many ways, "Modern Mining" explains through actual job reports and on-the-spot" photos the versatility of these units. From bulldozing and ripping overburden to primary power

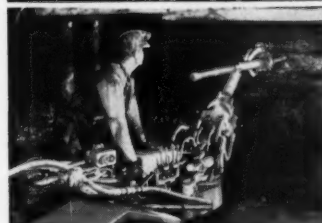
and hauling, the illustrated, color booklet takes the reader through many of the mines which have profited by using dependable Cat-built machines. The booklet also lists condensed data on some of the more recent units and discusses the bene-

fits of the large Caterpillar Dealer organization throughout the country.

Copies of "Modern Mining" are available from Caterpillar Dealers or by requesting Form No. 32554 from the Advertising Division, Caterpillar Tractor Co., Peoria, Illinois.



70-UR UNIVERSAL CUTTER ▲
▼ 56-RDR ROOF DRILL



56-FHR FACE DRILL ▲
▼ 81-A HIGH CAPACITY LOADER



Up coal production... with this hard-working **JEFFREY** team

Mine superintendents brag about the tonnage-producing ability of this underground team... the Jeffrey universal cutter, high capacity loader, face drill and roof drill. Each of these hard-working machines is packed with design features which add ease and efficiency to mining operations. And rugged Jeffrey construction cuts maintenance cost and downtime... assures long, trouble-free service.

Write for details on a particular machine or the complete underground service team. The Jeffrey Manufacturing Company, 969 North Fourth Street, Columbus 16, Ohio.



JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY... CONTRACT MANUFACTURING

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS
Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills



Drills holes faster—Will not snap off shank or chip points—Outlasts four or five ordinary augers

THE SALEM TOOL COMPANY

SALEM, OHIO, U.S.A.

FOR HIGH PRODUCTION AND LOWEST OPERATING COSTS—

NOTHING equals the

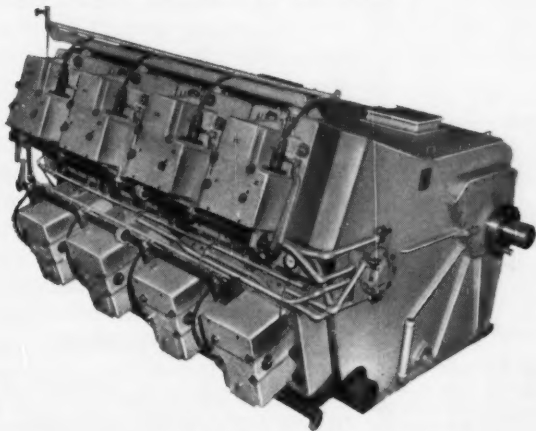
**PAGE
700**

**SERIES
SINGLE DECK WALKING DRAGLINE**

3 models
5 to 22 cubic
yard capacities



**Powered by the
DRAGLINE-PROVED PAGE
HORIZONTAL V-TYPE DIESEL**



The Page Engines powering 700 Series Draglines are designed specifically for dragline work . . . to work longer, at lower cost, with less downtime and maintenance than any other engine. Big bearings, big pistons, a short, stiff crankshaft and slow (450 RPM) speed are only part of the story of why many Page Diesels are still producing maximum horsepower after 20 years of operation. Bulletin WDSD-155 has full details.

Page 700 Series Draglines are rugged, compact, work-horse machines. They are designed and built with the fastest practical hoist and swing speed to reduce cycle time and increase yardage.

The Page 700 Series Dragline is proof that a fast, efficient, medium-sized machine will consistently outperform larger, but slower machines in virtually every kind of digging.

In addition, initial investment for a Page 700 Series Walking Dragline is considerably smaller, and operating and maintenance costs are lower. Want more details? Write for Bulletin WDSD-155 today. There's no obligation.

FRANK SWABB EQUIPMENT CO.

Hazleton National Bank Bldg.

Hazleton, Pa., Phone Gladstone 5-3658

Page
Automatic Dragline
Buckets
Walking Draglines

**CUT MAINTENANCE COSTS!
SAVE DOWN TIME! on
your Hydraulic System**

Keep it clean with
SCHROEDER LINE FILTERS

The Schroeder Line Filter is the answer to keeping harmful dirt from slowing down the operation of your hydraulic equipment. This small, all-in-one unit has a large filtering capacity and removes damaging particles too small to be seen.

Here's why SCHROEDER LINE FILTERS are preferred:

- Filter element costs little and is replaceable.
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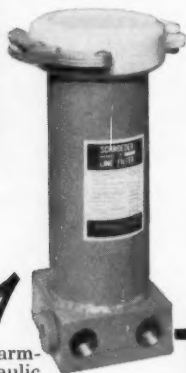
Optional Spin-Dicator provides visual supervision of performance.

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Hydraulic, Electric and Pneumatic Equipment

REDUCE WEAR AND DOWN TIME... Install SCHROEDER LINE FILTERS



• Euclid Division of General Motors Corp. has just introduced a new front end loader with a rated payload capacity of 19 cu. ft. Struck capacity of the bucket is 14 cu. ft.—maximum lifting load is 3,000 lbs.

Designated as the Model L-7, the rubber-tired loader is now being announced after two years of development and extensive field test in foundries, steel mills, chemical and fertilizer plants as well as other industrial operations. It is the first, and smallest in capacity, of several loader models that will be built by Euclid for bulk material handling and other work suitable for front end loader equipment.



The L-7 has a number of features that provide exceptional maneuverability, easy operation and good versatility for intra-plant material handling. Conveniently located controls provide instant response. Compact design permits operation in confined areas where other power equipment cannot be used. Equipped with torque converter and power shift transmission having synchronized non-stop high-low shift, speeds range up to 11 MPH forward or reverse. There is an interconnecting valve between foot brake and the driving clutches within the transmission. This "inching" valve permits machine to ease into restricted areas merely by operation of foot brake. Wheel base is 4'0" and overall length with bucket down is 10' 1½". Turning radius is only 6'2½" and there is 5" ground clearance. The "Eucl" Loader has rear-wheel steer; front wheel drive is powered by a 49 h.p. Continental gasoline engine. With an operator of average height, the overall operating height is 6'9½".



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- 1—Joy 8AE Super 14BU Loader, rebuilt.
- 3—Joy 14 BU Loaders, low pedestal, 7AE.
- 2—Joy 14BU Loaders, medium pedestal, 7BEE.
- 1—Joy 14 BU Loader, high pedestal, 7BE.
- 2—Joy 12BU Loaders, 9E, latest type.
- 1—Joy 20BU Loader, latest type.
- 1—Joy 11 BU Loader, latest type.
- 2—Joy 8BU Loaders, 250 volt DC.
- 1—Joy 8BU Loader, 34" overall height.
- 2—Joy 8BU Loaders, 220 volt AC.
- 2—Joy curved bar heads, complete.
- 3—Reliance 35-J Motors, 10 H.P.
- 6—Reliance 24-J Motors, 7½ H.P.
- 5—Reliance 10-J Motors, 5 H.P.
- 6—New Wheel Units for Joy 6 SC Shuttle Car.
- 1—Goodman 660 Loader on cats, excellent.
- 3—Goodman 665 Loaders on cats, latest type.
- 2—Joy 6 SC Shuttle Cars, rebuilt.
- 1—Joy 5SC Shuttle Car, rebuilt.
- 2—Joy 32E9 Shuttle Cars.
- 2—Joy 32E10 Shuttle Cars, rebuilt.
- 2—Joy 32E15 Shuttle Cars, rebuilt.
- 1—Joy 32E16 Shuttle Car, rebuilt.
- 1—Joy T-2-5 low pan Cat Truck.
- 1—Joy T-2-6 low pan Cat Trucks with reel.
- 2—Joy T-1 Standard Cat Trucks, 220 AC.
- 1—Joy T-1 Standard Cat Truck, 250 DC.
- 2—Joy 11B Cutting Machines, like new.
- 1—Joy 7B Cutting Machine, like new.
- 3—Joy CD-22 Drills, like new.
- 2—Goodman 512 Machines with Bugdusters.
- 1—Goodman Machine on Cats, 31" high. All hydraulic.
- 1—Goodman 512 Cutting Machine, perfect.
- 2—Goodman 512 Cutting Machines, 220 volt AC.
- 1—Lee Norse low vein Machine Carrier on rubber.
- 2—Jeffrey 70URB's, rubber-tired Cutters, Universal head, perfect condition.
- 2—Joy 11RU rubber-tired Cutters with bugdusters, universal head and dual tires.
- 4—Jeffrey 29UC Cutting Machines, Universal Head, cuts anywhere in seam, 38" high on cats, 250 volt DC.

LOCOMOTIVES

- 2—Jeffrey MH-2154's, 15 tons, perfect, 42" Ga.
- 4—Jeffrey, 13 ton, type MH-110, 36", 42" and 44" Ga.
- 3—Jeffrey, 10 ton, type MH-78, 42" and 48" Ga.
- 12—Jeffrey, 6 ton, type MH-88, 42", 44" and 48" Ga.
- 8—Jeffrey MH-78 Locomotive Units—cheap.
- 4—Jeffrey MH-88 Locomotive Units, real bargains.
- 2—Jeffrey MH-100 Locomotive Units, reasonable.
- 2—Jeffrey, 8 ton, type MH-100, 2" armor plate frame.
- 1—Jeffrey, 6 ton, type 2186, 22" above rail.
- 3—Jeffrey, 4 ton, type MH-96, 42", 44" and 48" Ga.
- 1—G. E. 4 ton, type 825 Locomotive, 22" high.
- 10—G. E. 6 ton, types 801, 803, 821 Locomotives, 42", 44" and 48" Ga.
- 1—G. E. 8 ton, type 822 Locomotive, 44" Ga.
- 3—G. E. 10 ton, type 809 Locomotives, 42", 44" and 48" Ga.
- 1—Goodman, 4 ton, 8-30 Locomotive, 22" above rail.
- 2—Goodman type 33, 6 ton, 44" and 48" Ga.
- 3—Goodman, 8 ton, type 32A, 36", 44" and 48" Ga.
- 3—Westinghouse type 902, 4 ton, 42" and 48" Ga.
- 2—Westinghouse, type 904, 6 ton, 44 and 48" gauge.
- 2—Westinghouse type 906, 44" and 48" Ga.
- 2—Westinghouse type 907, 10 ton, 44" and 48" Ga.
- 2—Diesel Locomotives, 8 and 10 tons. Excellent. Locomotive Trucks and Spare Armatures for all the above.

TIPPLE EQUIPMENT

- 1—Cedar Rapids portable super Screening Plant.
- 1—Allis Chalmers 5'x14' Rippflo Vibrator.
- 1—5'x14' Robbins double deck Vibrator.
- 1—4'x10' Robbins Gyrex Vibrator.
- 1—McNally Pittsburgh all steel tippie, four track, perfect.
- 1—Complete five track Tippie, all steel, with two compartment Jeffrey washer.
- 1—Menzies tandem Hydro-Separator.
- Belt Loading Booms.
- 1—Robins Car Shakeout.
- 10—Crushers, various sizes.
- Feeders, Drag Conveyors, and Loading Booms.

CUTTING MACHINES

- 2—Jeffrey 70URB Cutters, rubber tired, universal head, low vein.
- 4—Jeffrey 29UC Universal Machines on cats.
- 2—Joy rubber tired 11RU Cutters with bugdusters.
- 1—Goodman on cats, 31" overall height.
- 1—Baby Goodman 212, rebuilt, 250 volt DC.
- 1—Baby Goodman 212, rebuilt, 220 volt, 3 phase AC.
- 1—Goodman 312, 18" high.
- 2—Goodman 512's with Bug-dusters, like new.
- 4—Goodman 512's, rebuilt, or as removed from service.
- 2—Joy 11B Cutting Machines, rebuilt.
- 2—Goodman 512 Cutting Machines, 220 volt AC.
- 6—Goodman 12AA's and 112AA's.
- 2—Goodman 324 Slabbers.
- 2—Goodman 724 Slabbers.
- 6—Jeffrey 35L's, like new, 17" high.
- 2—Jeffrey 35L's, on low vein trucks.
- 15—Jeffrey 35B's and 35BB's.
- 2—Jeffrey 29B's on track.
- 2—Jeffrey 29C's, track mounted.
- 1—Jeffrey 29L on track, perfect.
- 2—Sullivan CE-10's, 18" high.

LOADING MACHINES

- 16—Loaders, all types.
- 2—Jeffrey 61CLR's on rubber, 26".
- 3—Jeffrey L-500 Loaders.
- 2—Myers Whaley No. 3 Automat Loaders.
- 2—Clarkson Loaders, 26" above rail.

CONVEYORS

- 2—Jeffrey 52-B, 30" conveyors, 1500' each. Excellent.
- 4—Joy 30" Underground Belt Conveyors, 500' to 2000' each, excellent.
- 1—Barber Greene 30" Belt Conveyor, 1000' excellent.
- 1—Robins 30" Belt Conveyor, 1000'.
- 2—Jeffrey 52-B, 26" Conveyors, 1200' each.
- 3000' Conveyor Belt, 30".
- 2—61RW Elevating Conveyors.
- 2—61WH 16" Room Conveyors, 300 ft.
- 4—Joy Ladel Un-17 Shakers.
- 10—Goodman G-12½ and G-15 Shakers.
- 3—Long 400 DBH 15" Chain Conveyors, 25 H. P. Motors—new.

CONVERTERS AND DIESEL PLANTS

- 1—50KW. G. E. TC-6, 275 volt Rotary Converter.
- 2—100KW. G. E. TCC-4's, 275 volt, Rotary Converters.
- 1—150KW. G. E. MCC-6, 275 volt Rotary Converter.
- 1—150KW, 6 phase, Allis Chalmers Rotary Converter, 275 volt DC, perfect.
- 1—200KW G. E. MCC-6 Rotary Converter, 275 volt DC.
- 3—300KW. G. E. HCC-6 Rotary Converters, 275 DC.
- 3—300KW Westinghouse, 6 phase, Rotary Converters, 275 volt DC.
- 1—375KW Westinghouse Rotary Converter, 275 volt.
- 2—500KW Westinghouse Rotary Converters, 275 volt DC.
- 1—300KW Westinghouse Rotary Converter, 275 DC.
- 1—200KW, Allis Chalmers Rotary Converter, 6 phase, 275 DC, perfect.
- (All the above with 6900/13000 and-or 2300/4000 primary transformers).
- 2—150KW MG Sets, General Electric and Westinghouse.
- 1—200KW MG Set, Westinghouse, rebuilt.
- 1—200KW MG Set, General Electric, perfect.
- 2—150KW Allis Chalmers MG Sets, 275 DC volt, excellent, 220-440 AC volt.
- 1—300 KW Westinghouse, 600 volt, MG Set, rebuilt.
- 2—300KW Westinghouse, 600 volt, 6 phase, Rotary Converters.
- 4—500KW Westinghouse, 600 volt, DC, 6 phase, Rotary Converters.
- 1—500KW HCC-6 Rotary Converter, 6 phase, 600 volt DC.
- 1—Cummins 125KW Diesel with 250 volt DC Generator.
- 1—G. M. C. Diesel Plant with 60KW Generator, 275 volt DC.
- 1—D-13,000 Caterpillar Diesel with 75KW Generator, 275 volt DC.
- 1—Allis Chalmers Natural Gas Engine with 100KW Generator, 275 volt DC.
- 1—700 H. P. Shaft Hoist, complete.
- Complete steam plant, will sell all or any part. Boilers, like new, 1100 H. P. and 500 H. P. Also transformers, turbines, etc.
- 3—Complete Tipples with Cleaning Plants, "2 all steel".

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- Battery Supply Tractors, rubber tired.
- 10—Air Compressors, 1 H. P. to 40 H. P.
- 40—Mine Pumps, all types.
- 2—Barber Greene self propelled bucket elevators.
- Pipe, plastic, steel, transit, all sizes 1" to 6".
- 45—Mine Cars, drop bottom, 48" Ga.
- 30 Mine Cars, drop bottom, 44" Ga.
- 100—Mine Cars, 18" high, end dump, 44" Ga.
- 90—Mine Cars, end dump, 20" high, 48" Ga.
- 1—10 ton Mine Car Scale with Recorder.
- 1—150 ton Railroad Track Scale.
- 15—Brown Payro HKL and HG Car Spotters.
- HG Room Hoist
- 1—12 ton Differential Slate Larry.
- Incline Hoists, 25 to 50 H. P.
- 1—Joy 5' Aerodyne Fan.
- 1—Jeffrey 6 ft. Aerodyne Fan.
- 1—Jeffrey 8' Aerodyne Fan.
- 1—Storage Tank, 8,000 Gallon.
- 2—Storage Tanks, 4,000 Gallon.
- 1—Storage Tank, 12,000 Gallon.
- Five Gallon G. I. Cans.
- 500 Tons Relaying Rail, 25# to 80#.
- 10 tons copper trolley and feeder.
- 300—Transformers from 1 to 2,000 KVA, 110 to 13,000 primary volts.
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- Huge stock of Mine Supplies.

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See or call the Parts Manager at any one of the five Ohio Machinery offices for complete information.

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 1—Fairfield Conveyor.
 2—Air Compressors.
 4—DC Bonders. AC Welders.
 1—Drag Cable Motor, rubber-tired.
 1—5x7 rubber-tired Mine Car.
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 1—8 ton Goodman Locomotive.
 1—5 ton Goodman Locomotive.
 1—3 ton Goodman Locomotive.
 1—G. E. 825 Locomotive, 26" above rail.
 1—MH-96 Locomotive, 4 ton.
 1—MH-88 Locomotive, 6 ton.
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 1—Goodman 312 Machine.
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Item 1057-C418 — Caterpillar Model D8 Tractor with Cat 8A Angling Bulldozer and Rear Cable Control. Engine appears to be good; blade is good, cable, cable control good; requires steering clutch work, new tracks, some roller and final drive repairs. Can be operated as is.

\$4500.00
F.O.B., Clearfield, Pa.

Item 557-B195. Caterpillar D8 Tractor with 8A Blade and No. 25 Double Drum Cable Control. New pistons and rings installed in engine; reconditioned cylinder head; repaired flywheel clutch, transmission, cable control, generator, magneto, track rollers and final drives. New 24" grouser tracks have operated approx. 60 days. Good appearance. This tractor is in good mechanical condition.

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Item 1057-P674. Caterpillar Model D8 Tractor with \$25 Cable Control Unit and 8S Straight Blade. Rebuilt bottom rollers; installed new seals in No. 25 Cable Control. Tuned engine and adjusted operating clutches.

\$9500.00
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Item 857-C411. Caterpillar D8 Tractor with 8A Bulldozer and No. 25 Rear Cable Control. Canopy top, crankcase guard, track roller guards. This machine has worked about 1100 hours since new tracks were installed; rollers rebuilt; idlers rebuilt; sprocket rims installed; carrier rollers replaced; transmission repairs were made. Completely checked and adjusted.

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Also, Smaller Draglines

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3500 Manitowoc 2 yd. H. L. Shovel.
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GE El. 30 Ton Mine Loco.—250 volt—42 in. or 44 in. ga.
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Lorain L85 Dragline—Shovel late model, and Lorain 79 shovel.
Lima 1201—2½ yd. Shovel.
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Reason why? Because more and better light is always on the job with the brilliant, unfailing beam of the Edison R-4. This dependable source of illumination permits the miner to perform his duties with utmost efficiency and safety. You don't have long to wait for results with the Edison R-4, either. They register quickly in terms of accident prevention and increased tonnage per man-shift.

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